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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/764,058 | 01/23/2004 | Dennis Williams | 0JFM-103198 | 7619 |

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| EXAMINER | |
|---|---|
| DRODGE, JOSEPH W | |
| **ART UNIT** | **PAPER NUMBER** |
| 1723 | |

DATE MAILED: 05/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/764,058 | WILLIAMS ET AL. | |
| | Examiner | Art Unit | |
| | Joseph W. Drodge | 1723 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) 1-32 is/are pending in the application.

4a) Of the above claim(s) 28-32 is/are withdrawn from consideration.

5)☒ Claim(s) 21-24 is/are allowed.

6)☒ Claim(s) 1-11,16-18 and 25-27 is/are rejected.

7)☒ Claim(s) 12-15,19 and 20 is/are objected to.

8)☒ Claim(s) 28-32 are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 0404.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-27, drawn to hollow fiber membrane modules, classified in class 210, subclass 321.79.

II. Claims 28-32, drawn to a method for fabricating a membrane, classified in class 29, subclass 896.62.

The inventions are independent or distinct, each from the other because:

Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the process as claimed can be used to make a membrane product constructed and adapted to separate a single fluid into permeate and retentate rather than to direct two separate fluids through membrane modules as in the apparatus or product claims.

Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are independent or distinct for the reasons given above and the inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with James Bruggerman on May 24, 2006, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-27. Affirmation of this election must be made by applicant in replying to this Office action. Claims 28-32 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-11,16-18 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cote et al patent 5,104,535 in view of Prasad et al patent 5,352,361.

For independent claims 1 and 25, Cote et al disclose mating or contiguous membrane modules or stacks arranged in series, each containing hollow fiber membranes, all within a housing or conduit (figures 4 and 5 and corresponding text of column 11, line 42-column 12, line 34), with a 1st fluid being fed into the membranes by feed or inlet, and a 2nd fluid being fed from a source that flows transverse to the membranes or membrane modules to allow transfer of material from 1st to 2nd fluid so as to modify the concentration of substance in the 1st or 2nd fluid (see especially column 11, lines 42-55).

The claims all differ in requiring there being a baffle assembly within the conduit to force the flow of fluid along a transverse flow path past the exterior surfaces of the membranes. However, Prasad teaches a membrane module for transferring material from 1st fluid to 2nd fluid, the fluids being separated by a membrane, in which a baffle assembly guides and directs a fluid to flow past exterior surfaces of the module(s) (especially column 8, line 58-column 9, line 5). It would have been obvious to one or ordinary skill in the art at the time of the invention to have utilized the baffle of Prasad in

the apparatus configuration of Cote et al, in order to prevent premature mixing of the permeate and the material-receiving fluid.

Cote also discloses the following for dependent claims: for claim 2, there being multiple similar mating membrane modules (figures 4 and 5, and corresponding text), claim 3, membrane material of polypropylene, for claim 4 the housing or pipe 40 being cylindrical (figures 4 & 5 or column 10, line 51), for claims 5-6 the membranes constituting end and side plates, sections or supports (column 13, lines 10-16 and 45-53 and see figures 4 and 5), for claims 7 and 8 space filling and component securing or potting material that may be epoxy (column 9, lines 30-58), for claim 9, O-rings 49/column 11, lines 14-16, for claim 10, tube fittings 45 and 46 connected to end plates (column 11, lines 24-29) , for claims 11,16-18,26 and 27 gasketed, screened flow dividers 52/53 (column 11, lines 17-23) between each membrane module stage at their inlet and outlet ends and having upper, side and lower ends interfacing with inner surface of conduit or housing, for dividing flow of fluids there-through.

ALLOWABLE SUBJECT MATTER

Claims 12-15,19 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 12 distinguishes over the closest prior art, Cote et al, in view of recitation of a flow divider that includes a plurality of flow vanes. Dividers of such complexity are not suggested or contemplated by Cote et al. Claims 13-15, 19 and 20 are all distinguished over Cote et al in requiring there being a module guide connected to the flow divider. The concept or

corresponding structure of a module guide is not suggested anywhere in Cote et al or Prasad or in the other references made of record.

Independent claim 21 and claims 22—24 which depend from claim 21 distinguish over all of the prior art, especially Cote et al, in view of recitation in claim 21 of there being three separate flow diversion assemblies located within the conduit, the 1st assembly operable to both direct flow of 1st fluid into the 1st stage and flow of 2nd fluid out of a 2nd membrane module stage, the 2nd assembly to direct flow of 1st fluid leaving the 1st stage and 3rd assembly to direct flow of 1st fluid into the 2nd stage.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Eckman patent 5,470,469; Bikson et al patent 5,071,552 and Karbachsch et al patent 5,034,125 are further representative of membrane modules joined in series relationship within an outer housing or conduit. Puri et al patent 5,176,725 is of interest for recitation of concentrically arranged plural membrane modules for transferring material between a feed fluid and a second fluid.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Drodge at telephone number 571-272-1140. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker, can reached at 571-272-1151. The fax phone number for the examining group where this application is assigned is

571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or Public PAIR, and through Private PAIR only for unpublished applications. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JWD

May 25, 2006

JOSEPH DRODGE
PRIMARY EXAMINER